

## CLAIMS

What is claimed is:

1. An assembly method for a Chip On Board semiconductor device having a semiconductor die having a heat sink cap abutting a portion of the top surface of a substrate including:  
placing a compliant adhesive filled gel silicone elastomer between a portion of an upper surface of said semiconductor die and a portion of a lower surface of said heat sink cap;  
pressing said semiconductor die into said cap to engage said die and cap in compliant removable adhesion and for the edge of the cap to abut the substrate; and  
injecting an encapsulant into said heat sink cap engaging at least interior portions of said heat sink cap, at least portions of said semiconductor die, at least portions of an upper surface of said substrate, and at least portions of said filled gel silicone elastomer.
2. The method of claim 1, wherein said compliant adhesive filled gel elastomer includes a cross-linked silicone.
3. An assembly method for a Chip On Board semiconductor device having a semiconductor die contained within a portion of a cap having a lower edge abutting a portion of a top surface of a substrate comprising:  
positioning a compliant adhesive filled gel silicone elastomer between said semiconductor die and said cap;  
pressing said semiconductor die into said cap causing removable adhesion of said semiconductor die and said cap and causing the lower edge of said cap to abut said substrate; and  
injecting an encapsulant into said cap engaging at least interior portions of said cap, at least portions of said semiconductor die, at least portions of an upper surface of said substrate, and at least portions of said filled gel silicone elastomer.

4. The method of claim 3, wherein said adhesive filled gel elastomer includes a metal filled cross-linked silicone.